Listing of claims:

This listing of claims replaces all prior versions, and listings, of claims in the application.

Claims 1 – 9. (Canceled)

10. (Currently Amended) A method of etching silicon oxide as claimed in claim ~~9~~ 29 wherein said carbon fluoride gas is ~~at least one member~~ selected from the group consisting of C_5F_8, C_4F_6, C_3F_4, ~~and~~ C_2F_2, and mixtures thereof.

11. (Currently Amended) A method of etching silicon oxide as claimed in claim ~~9~~ 29 wherein said ~~auxiliary~~ fluorohydrocarbon gas is ~~at least one member~~ selected from the group consisting of CH_2F_2, ~~and~~ CHF_3, and mixtures thereof.

12. (Currently Amended) A method of etching silicon oxide as claimed in claim ~~9~~ 29 wherein ~~a~~ the ratio of the volumetric flow rate of ~~said auxiliary~~ the fluorohydrocarbon gas ~~with respect~~ to that of ~~said~~ the carbon fluoride gas is in a range of about ~~0.1-3.0~~ 0.1 to 1.0.

13. (Currently Amended) A method of etching silicon oxide as claimed in claim ~~9~~ 29 further wherein said etching gas composition comprises CO, and a ratio of the volumetric flow rate of said CO with respect to that of said carbon fluoride gas is in a range of about 1-30.

14. (Canceled)

15. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein said carbon fluoride gas is at least one member selected from the group consisting of C_5F_8, C_4F_6, C_3F_4 and C_2F_2, and mixtures thereof [[,]] ~~and wherein said auxiliary gas is at least one member selected from the group consisting of CH_2F_2 and CHF_3, and mixtures thereof, and wherein a ratio of the volumetric flow rate of said auxiliary gas with respect to that of said carbon fluoride gas to said reaction chamber is in a range of about 0.1-3.0~~.

16. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein said etching gas composition further comprises CO, and a ratio of the volumetric flow rate of said CO with respect to that of said carbon fluoride gas to said reaction chamber is in a range of about 1-30.

17. (Canceled)

18. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein said photoresist is a photoresist applicable for DUV wavelength.

19. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein ~~an aspect ratio of~~ said contact hole ~~is~~ has an aspect ratio having a value in a range of about ~~8-17~~ 8:1 to 17:1.

20. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein a diameter of said contact hole is in a range of about 150-250 nm.

21. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein a thickness of said silicon oxide layer is in a range of about 20,000-40,000Å.

22. (Currently Amended) A method of manufacturing a contact hole of a semiconductor device as claimed in claim ~~14~~ 30 wherein said semiconductor device is a DRAM device, and said contact hole is an MC (metal contact hole) for connecting a metal layer formed on said silicon oxide layer formed on a capacitor with an impurity doped region.

23. (New) A method of manufacturing a contact hole of a semiconductor device comprising the steps of:

forming a silicon oxide layer by depositing silicon oxide on a semiconductor substrate;

forming a photoresist pattern as an etching mask on said silicon oxide layer;

loading said substrate on which said photoresist pattern is formed into a reaction chamber;

introducing an etching gas composition wherein said etching gas composition comprises about 5-20 parts by volume of C_5F_8 gas, about 200-500 parts by volume of Ar gas, about 20-150 parts by volume of CO gas, about 2-20 parts by volume of O_2 gas, and about 2-15 parts by

volume of CH_2F_2 gas into said reaction chamber, and further wherein a pressure within said reaction chamber is maintained in a range of about 10-60 Torr; and,

producing plasma of said etching gas composition and etching said silicon oxide layer by the produced plasma.

24. (New) A method of manufacturing a contact hole of a semiconductor device as claimed in claim 23 wherein said photoresist is a photoresist applicable for DUV wavelength.

25. (New) A method of manufacturing a contact hole of a semiconductor device as claimed in claim 23 wherein said contact hole has an aspect ratio having a value in a range of about 8:1 to 17:1.

26. (New) A method of manufacturing a contact hole of a semiconductor device as claimed in claim 23 wherein a diameter of said contact hole is in a range of about 150-250 nm.

27. (New) A method of manufacturing a contact hole of a semiconductor device as claimed in claim 23 wherein a thickness of said silicon oxide layer is in a range of about 20,000-40,000Å.

28. (New) A method of manufacturing a contact hole of a semiconductor device as claimed in claim 23 wherein said semiconductor device is a DRAM device, and said contact hole

is an MC (metal contact hole) for connecting a metal layer formed on said silicon oxide layer formed on a capacitor with an impurity doped region.

29. (New) A method of etching a silicon oxide layer comprising the steps of:

(a) flowing an etching gas composition into a plasma chamber, wherein the etching gas composition consists essentially of: (i) a carbon fluoride gas of the general chemical formula C_xF_y, in which y/x is a ratio having a value less than 2 and which chemical formula includes at least a double or a triple carbon-carbon bond; (ii) a fluorohydrocarbon gas of the general chemical formula $C_kH_lF_m$, in which k, l and m are positive integers and wherein the volumetric flow rate of the fluorohydrocarbon gas to that of the carbon fluoride gas is a ratio having a value in a range of about 0.1 to 3.0; and (iii) oxygen, wherein the volumetric flow rate of oxygen to that of the carbon fluoride gas is a ratio having a value of about 1 to 1; and,

(b) implementing an etching procedure by generating a plasma of said etching gas composition inside said plasma chamber, and applying said plasma onto said silicon oxide to form contact holes of substantially the same depth and with a high aspect ratio, each having top and bottom portions, wherein the top portion of each contact hole is only very slightly wider than the bottom portion.

30. (New) A method of manufacturing contact holes of a semiconductor device comprising the steps of:

forming a silicon oxide layer by depositing silicon oxide on a semiconductor substrate;

forming a photoresist pattern as an etching mask on said silicon oxide layer;

loading said substrate on which said photoresist pattern is formed into a reaction chamber;

flowing an etching gas composition into said reaction chamber, wherein the etching gas composition consists essentially of: (i) a carbon fluoride gas of the general chemical formula C_xF_y, in which y/x is a ratio having a value less than 2 and which chemical formula includes at least a double or a triple carbon-carbon bond; (ii) a fluorohydrocarbon gas of the general chemical formula $C_kH_lF_m$, in which k, l and m are positive integers and wherein the volumetric flow rate of the fluorohydrocarbon gas to that of the carbon fluoride gas is a ratio having a value in a range of about 0.1 to 3.0; and (iii) oxygen, wherein the volumetric flow rate of oxygen to that of the carbon fluoride gas is a ratio having a value of about 1 to 1; and,

producing plasma of said etching gas composition and etching said silicon oxide layer by the produced plasma to form contact holes of substantially the same depth and with a high aspect ratio, each having top and bottom portions, wherein the top portion of each contact hole is only very slightly wider than the bottom portion.

31. (New) A method of etching a silicon oxide layer comprising the steps of:

(a) flowing an etching gas composition into a plasma chamber, wherein the etching gas composition consists essentially of: (i) a carbon fluoride gas selected from the group consisting of C_4F_6, C_3F_4, C_2F_2, and mixtures thereof; and (ii) a fluorohydrocarbon gas of the general chemical formula $C_kH_lF_m$, in which k, l and m are positive integers and wherein the volumetric flow rate of the fluorohydrocarbon gas to that of the carbon fluoride gas is a ratio having a value in a range of about 0.1 to 3.0; and,

(b) implementing an etching procedure by generating a plasma of said etching gas composition inside said plasma chamber, and applying said plasma onto said silicon oxide to form contact holes of substantially the same depth and with a high aspect ratio, each having top and bottom portions, wherein the top portion of each contact hole is only very slightly wider than the bottom portion.

32. (New) A method of manufacturing contact holes of a semiconductor device comprising the steps of:

forming a silicon oxide layer by depositing silicon oxide on a semiconductor substrate;

forming a photoresist pattern as an etching mask on said silicon oxide layer;

loading said substrate on which said photoresist pattern is formed into a reaction chamber;

flowing an etching gas composition into said reaction chamber, wherein the etching gas composition consists essentially of: (i) a carbon fluoride gas selected from the group consisting of C_4F_6, C_3F_4, C_2F_2, and mixtures thereof; and (ii) a fluorohydrocarbon gas of the general chemical formula $C_kH_lF_m$, in which k, l and m are positive integers and wherein the volumetric flow rate of the fluorohydrocarbon gas to that of the carbon fluoride gas is a ratio having a value in a range of about 0.1 to 3.0; and,

producing plasma of said etching gas composition and etching said silicon oxide layer by the produced plasma to form contact holes of substantially the same depth and with a high aspect ratio, each having top and bottom portions, wherein the top portion of each contact hole is only very slightly wider than the bottom portion.